NOTE XXIII.

ZOOLOGICAL RESULTS OF THE DUTCH SCIENTIFIC EXPEDITION TO CENTRAL BORNEO [1].

THE MOLLUSCA OF THE DUTCH SCIENTIFIC BORNEO-EXPEDITION,

WITH DESCRIPTION OF THE NEW SPECIES

BY

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(Plates 2, 3 and 4).

As the reader will see from the head of this paper, the collections are principally made in the interior of the island and therefore almost entirely restricted to terrestrial and freshwater forms. Seven new species have been obtained, while many others are very interesting with regard to the geographical distribution.

The few marine specimens, all belonging to common species, have been obtained by Dr. Hallier, the botanist of the expedition, on the Coast of Sambas and the opposite island Lemoekoetan.

I have given in this paper a complete list of the species, with description of the new ones.

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1) An ample explanation of the different localities where the zoological collections have been obtained, will be given later on in the „Notes" by Dr. J. Büttikofer in his paper on the ornithological collections of the expedition.

A. LAND- AND FRESHWATER MOLLUSKS.

1. *Vaginula Hasselti* Martens.

Martens, Preuss. Exped. nach Ost-Asien, Landschnecken, p. 176; pl. 5, fig. 4 (and 2).

Localities: Foot of Mount Kenepai, December 1893 (Büttikofer). — Poetoes Sibau and Poelau on the Sibau river, June 1894 (Büttikofer).

From each of the first-named localities one rather large specimen, from the third one four specimens.

2. *Vaginula Wallacei* Issel.

Issel, Molluschi Borneensi, in: Ann. del Mus. Civ. di Stor. Nat. di Genova, vol. VI, 1874, p. 385; pl. 4, figs. 1—3.

Localities: Smitau, December 1893 (Büttikofer). — Sintang (Büttikofer).

With this species I have identified a few specimens, slightly differing from each other in colour, but agreeing in other respects with the description of Issel, who had only one specimen for examination. Some specimens are more densely covered with the black spots than others; these spots are sometimes entirely absent on the underside of the mantle. A somewhat lighter zone on the median line exists in a few specimens, but not so clear as in the former species. The female generative aperture is situated on the posterior half of the body, while in *V. Hasselti* it lays in the anterior part. In the figure given by Issel the buccal mass is partly extruded, which often occurs in drowning the animals.

3. *Parmarion Goedhuisi*, n. sp.

(Plate 2, fig. 1).

Reddish grey, with more or less blackish shades on the neck, the upper part of the head, of the mantle and of the hindermost part of the body, where the black is concentrated near the sharp, grey keel, and divided into two black streaks under the intestinal pouch. The sides of the head and tail and the margin of the foot are marked with black spots; the ground-colour remains unspotted at the sides of the body below the pouch, on the keel and lowermost part of the pouch itself. The three zones of the foot are unspotted, and of the same colour as the upperside; the large mucous pore of the posterior end is provided above with a hornlike process. The keel of the intestinal pouch is not very prominent, and through the hole in its centre a golden yellow shell is visible; this latter is lustrous, provided with rather distant concentric folds, and seems to be thin, transparent, slightly calcareous in the centre, with a membranaceous margin.

Length of the animal (in spirits) about 31, that of the mantle 18 mill.; breadth of the foot $3^1/_2$ mill.

Length of the shell about $12^1/_2$, breadth 8 mill.

Localities: Smitau, December 1893 and June 1894 (Büttikofer). — Sintang (Goedhuis).

I can find no species with which our specimens may be identified; they differ from both species described by Issel. *P. Doriae* Issel is distinguished by having conspicuous dark spots; the new species agrees in colour more with *P. Beccarii* Issel, but the latter is still much more spotted; moreover *P. Goedhuisi* has a much more oblong shell. Issel says that the shell in *P. Beccarii* is »luteo-viridescens", in *P. Doriae* »rufa". The space occupied by the intestinal pouch is considerably larger in *P. Goedhuisi* than in any of the other known Bornean species.

4. *Parmarion Doriae* Issel.

Issel, Molluschi Borneensi, in: Ann. del Mus. Civ. di Stor. Nat. di Genova, vol. VI, 1874, p. 388; pl. 4, figs. 7, 8.

Localities: Top of Mount Damoes, near Sambas, 1100—1300 feet (Hallier). — Mount Kenepai (Büttikofer).

With some doubt I have identified these two specimens with *P. Doriae* of which only one specimen was known; the dark spots on the mantle are distinct, on the tail they are very obsolete if present at all in the specimen from

Mount Damoes, but I do not venture to describe new species in so difficult a genus on so little materials, unless the characters are very prominent.

5. *Microparmarion litteratus*, n. sp.

(Plate 2, fig. 2).

Body reddish grey, with black shades on the neck, the upper part of the head, a space on the forepart of the body above the margin of the foot, and the upper part of the tail, with the exception of the keel; the mantle with its lobes is sprinkled with irregular black spots, flowing together here and there and making the appearance of scripture; foot with its margin unspotted. Mucous pore with a horn above. Keel of the intestinal pouch rather obscure on the right side, more prominent on the left one. The part of the mantle surrounding the posterior part of the shell is membranaceous, giving the lateral parts the appearance of free lobes, like in *Helicarion*. The shell is very thin, wrinkled, greenish yellow, and shows traces of a volution. A large genital pore may be observed near the right side of the head.

Length of the animal (in spirits) about 30, that of the mantle 17 mill.; breadth of the foot nearly 3 mill.

Locality: Top of Mount Damoes, near Sambas, 1100—1300 feet (Hallier).

I have placed this species in the genus *Microparmarion*, on account of the volution of the shell, which at once distinguishes it from the former two species. The fact that the mantle looks interrupted posteriorly is, as far as I know, peculiar. The mantle is so strongly contracted as to expose also the under part of the intestinal pouch, which seems to be covered by a very thin layer of the shell, somewhat like in the next species, where the lobes of the mantle are free posteriorly. It is very desirable that larger series of this and allied forms may be collected, to permit a more accurate examination of the exterior and interior characters. This and the next species seem to be transitional forms between *Parmarion* and *Helicarion*[1]).

6. *Helicarion semicalcareus*, n. sp.

(Plate 2, fig. 3).

Shell globose, slightly depressed, only the upper part calcareous, lower part membranaceous, forming on the limit a slight angle; as the shell of the unique specimen is coherent to the body, its under surface and the form of the aperture are not visible; upper part smooth, shining, with a few wrinkles; colour golden yellow, except the nucleus which is chalk-white; spire and suture slightly sunken; whorls about 2, very rapidly increasing, nearly the whole shell formed by the last whorl, giving it the character of being a *Vitrina*; aperture very large, peristome thin.

Animal reddish grey, with darker shades on the back; sharply keeled, keel reddish behind; mucous pore with a horn above; shell-lobes with black streaks and spots; moreover a black line runs on the part of the mantle, which borders and covers the peristome.

Diam. maj. (of shell) $9^1/_2$, min. 7 mill. — Length of the animal 21 mill.

Locality: Top of Mount Liang Koeboeng, March 1894 (Büttikofer).

This species has much puzzled me; at first sight it looks like a *Vitrina* but on closer examination I can only identify it with *Helicarion*. It may be allied to *H. Whiteheadi* Godwin Austen, as most of the characters of this species can be applied to the specimen before me. Besides other differences, the most striking peculiarity by which it is distinguished from *Whiteheadi*, is the membranaceous substance of the infra-peripherical part of the shell. If later on more material of my species and of *H. Whiteheadi* will

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1) Messrs. W. E Collinge and H. H. Godwin-Austen have lately described two other species of *Microparmarion* from Borneo, and have given many anatomical details (Proc. Zool. Soc. London, 1895, p. 241; pls. 11—14).

be discovered; and the anatomical characters can be studied, they will perhaps prove to belong to a new genus.

7. *Xesta glutinosa* Metcalfe.

Metcalfe, Proc. Zool. Soc. London, 1851, p. 70. — Reeve, Conch. Icon. fig. 1378.

Locality: Mount Liang Koeboeng (Büttikofer).

With this species I identify with some doubt a broken shell, wanting part of the columellar margin and adjacent part of the peristome; it is very thin and pellucid, light greenish yellow, the keel but slightly indicated; if belonging to this species, it is an albino.

8. *Xesta Thisbe* E. A. Smith.

Smith, Proc. Zool. Soc. London, 1895, p. 101; pl. 2, fig. 4.

Locality: Mount Liang Koeboeng (Büttikofer).

One specimen. — This species is identified by its author, together with some other species, which remained doubtful, for want of materials for comparison.

9. *Hemiplecta densa* Adams & Reeve.

Adams & Reeve, Zool. Voy. Samarang, Moll. p. 62; pl. 16, fig. 8. — Martens, l. c. p. 230.

Locality: Near the coast of Sambas (Hallier).

The specimens belong to a form with a very thick shell.

10. *Hemiplecta praeculta* E. A. Smith.

Smith, Proc. Zool. Soc. London, 1895, p. 101; pl. 2, fig. 7.

Locality: Poelau on the Sibau River, June 1894 (Büttikofer).

Only one young specimen.

11. *Hemiplecta Büttikoferi*, n. sp.

(Plate 3, fig. 1).

Shell dextral, depressedly conoid, with a narrow umbilicus, sharply angulated at the periphery, rather thin, covered with a brownish yellow epidermis and provided with a black line below the suture and a narrow reddish brown zone, upon the keel of the last whorl; the sculpture consists of rather faint lines of growth; nuclear whorls nearly smooth, with only faint plicae near the suture, next whorls with spiral striae, the two last whorls moreover with oblique grooves, which give to the surface the appearance of being covered with oblique rugosities, which extend below the keel, but towards the umbilicus the spiral striae prevail, the other sculpture becoming obsolete. Spire conical, moderately elevated; whorls $5^1/_2$, rather flat, with a superficial suture, last whorl large and with a rather sharp keel; base of the shell more inflated, somewhat compressed near the keel. Aperture large, not descending, slightly oblique rhomboid, peristome straight, obtuse; upper margin sinuous, lower margin regularly rounded, passing without angle in the columellar margin, which is only slightly reflected near the umbilicus.

Diam. maj. 64, min. 53, alt. 33 mill.; apert. lat. 35, alt. 27 mill.

Localities: Nanga Raoen, May 1894 (Büttikofer). — Mount Liang Koeboeng (Büttikofer).

Of the specimen from Mt. Liang Koeboeng, with broken shell, I have made the anatomical notes.

This species, which I have named in honour of the Zoologist of the expedition, is allied to *H. densa*, but the shell is much larger than the largest specimen recorded by v. Martens (Ostas. Landschn. p. 230) which is only 54 mill. in diameter; the aperture is proportionately larger, the shell thinner, the umbilicus much smaller, and the last whorl broader. The sculpture is rather similar in both species.

Anatomy: The buccal mass is large, long 9, high 10 mill., rounded triangular, the radula-sac very slightly projecting; from the upper part proceeds a long oesophagus, which shows two enlargements, the first immediately behind the buccal mass and followed by a sudden constriction; from this latter the second reaches unto the place where the salivary glands are affixed; these latter are long (measuring about 18 mill.), the ducts are long and narrow (length about 30 mill.). The salivary glands are nearly grown together over their total length, the right half being produced into a point, the right duct is consequently the shortest. The jaw, measuring $5^1/_3$ mill. in latitude, is smooth, dark brownish yellow, arched, with rounded extremities; the free margin is provided with a blunt tooth. The radula, which was rather brittle, is about 12 mill. long, with a breadth of about 6 mill.; on account of their brittleness the margins were generally damaged, and the number of the rows of teeth could not be stated with accuracy; the largest number of rows in length is about 145, in breadth 301; the central tooth of each row is conical, oblong, with one cusp; the next lateral ones are slightly larger and unsymmetrical but for the rest similar; about the 20th lateral tooth on each side grows more slender, and between the 24th and 27th a rudimentary second cusp makes its appearance at the outer side of the principal one, and, gradually descending at each successive row, it becomes nearly equal to the principal cusp, from between the 50th and 60th tooth up to the margin.

The generative organs consist of a hermaphrodite gland, imbedded in the liver; it has a long duct, measuring 40 mill. in its natural position, moreover it is strongly twisted, and, if extended, it would be still considerably longer; albumen gland moderate, 15 mill. in length, oviduct strongly developed and wrinkled; upper part of the vagina much swollen; below this part a short, oval spermatheca, apparently without duct, is inserted; its top is affixed on the ovospermiduct by a short, broad muscle; a cylindrical part of the vagina leads to the generative cloak, which has on one side a very long, cylindrical, wormlike amatorial organ, which shows a single coil, and has a muscle at its top; the length is about 85 mill. Opposite to it, the penis is situated, which is bent on itself; the part adjacent to the cloak is about 15 mill. in length, then it is divided in a short flagellum of $3^1/_2$ mill., with a thin muscle which was united with the prostata; the bent part of the penis is nearly 5 mill.; on its top a long, slender retractor and the vas deferens, leading to the prostata, are inserted.

12. *Ryssota Brookei* Adams & Reeve.

Adams & Reeve, Zool. Voy. Samarang, Moll. p. 60; pl. 15, figs. 4*a*, 4*b*. — Reeve, Conch. Icon. fig. 377.

Localities: Mouth of the Mandai River, May 1894 (Büttikofer). — Foot of Mount Kenepai (Büttikofer).

From the first named locality a rather young specimen, with the oblique folds of the superior side of the shell well developed. The other specimen is full-grown with a thickened peristome.

13. *Dyakia nasuta* Metcalfe.

Metcalfe, Proc. Zool. Soc. London, 1851, p. 70. — Reeve, Conch. Icon. fig. 1031.

Locality: Top of Mount Klam near Sintang, January 1894 (Hallier).

A few specimens, the largest of which measures only 24 mill. instead of 35, as is mentioned by the author; having also a whorl less, it may be a young one, though the projection of the aperture is already faintly marked. The specimens are too little in number, to describe a new variety upon, which will probably prove to be desirable when more material is at hand.

14. *Dyakia Lindstedti* Pfr. var. *castanea* E. A. Smith.

Smith, Proc. Zool. Soc. London, 1895, p. 103.

Localities: Foot of Mount Semedoem, 350 M., and foot of Mount Damoes (Hallier). — Sintang (Goedhuis).

15. *Dyakia mindaiensis* Bock.

Bock, Proc. Zool. Soc. London, 1881, p. 633; pl. 55, fig. 7.

Locality: Cavern on Mount Liang Koeboeng, 800 M., March 1894 (Büttikofer).

One fine specimen, larger than the type described by Bock, measuring 38 instead of 30 mill., but agreeing with it in every other respect.

16. *Dyakia densestriata*, n. sp.

(Plate 3, fig. 2).

Shell dull reddish brown, discoid, narrowly umbilicated, sharply keeled; sculpture: above remote rib-like folds, with hair-like intermediate raised striae, scarcely visible without a lens; these striae are waved and granular, the granulation giving the appearance to the shell of being spirally striate; under surface with the same sculpture, but less developed and accordingly more smooth and shining, moreover with a few scattered grooves; apex blunt; spire moderately elevated, with 7 slowly increasing, nearly flat whorls; suture shallow, in some parts showing the keel, which is sharp and prominent in the last whorl; the shell is slightly excavated above and below the keel; aperture semilunate, slightly oblique; peristome thin, with a short, curved upper margin and a regularly rounded lower one, which is slightly produced in the middle; columellar margin very oblique, slightly reflected on and partly covering the umbilicus.

Diam. maj. 37, min. 33, alt. 19 mill.; apert. lat. 18, alt. $13^1/_2$ mill.

Localities: Mount Liang Gagang, March 1894 (Hallier). — Mount Tiloeng, May 1894 (Büttikofer). — Sintang (Büttikofer).

In the first named locality one dextral and some sinistral specimens have been collected; on Mount Tiloeng one sinistral. Most of the specimens have also spiral and oblique grooves on the upper part of the shell. The specimen from Sintang is incomplete; though slightly differing in sculpture, I think it may be merely a variety.

The nearest allied species, as far as concerns shape, seems to be *Nanina (Dyakia) Janus*, as figured by v. Martens (Ostas. Landschn. pl. 11, fig. 4), but the last whorl in that species is broader, the upper margin of the aperture is consequently longer and seems to be less curved, and the sculpture is different.

17. *Everettia consul* Pfeiffer.

Pfeiffer, Proc. Zool. Soc. London, 1854, p. 289; id., Nov. Conch. III, p. 306; pl. 74, figs. 11, 12.

Locality: Mount Sekedau, small mountain near Mount Kenepai (Moret).

18. *Everettia hyalina* Martens.

Martens, Preuss. Exped. nach Ost-Asien, Landschn. p. 241; pl. 12, fig. 5.

Localities: Smitau, December 1893 (Büttikofer). — Foot of Mount Tiloeng, February 1894 (Büttikofer). — Sintang (Büttikofer).

19. *Everettia cinnamomea* Eydoux.

Eydoux, Magasin de Zool. 1838, pl. 116, fig. 1.

Locality: Sintang (Moret).

The specimens are slightly different in colour from specimens from the Natuna Islands, which are darker.

20. *Everettia* sp.

Locality: Mount Liang Koeboeng, March 1894 (Büttikofer).

One young specimen of about 4 whorls, reddish horn-colour. It cannot be identified with certainty.

21. *Trochomorpha bicolor* Martens.

Martens, l. c. p. 252; pl. 13, fig. 2.

Localities: Mount Kenepai (Büttikofer). — Smitau (Büttikofer).

With spiral striae on the under surface, as stated by v. Martens (l. c. p. 253) for some Bornean specimens.

22. *Trochonanina conicoides* Metcalfe.

Metcalfe, Proc. Zool. Soc. London, 1851, p. 71. Reeve, Conch. Icon. fig. 449.

Locality: Coast of Sambas (Hallier).

One specimen.

23. *Amphidromus inversus* Müller.

Martens, Preuss. Exped. nach Ost-Asien, Landschn. p. 337. — Reeve, Conch. Icon. fig. 220 (*Bul. contusus*).

Localities: Coast of Sambas (Hallier). — Smitau on the Kapoeas River, and Roema Manoeal on the southern foot of Mount Kenepai (Büttikofer). — Mount Dadap (Moret). — Sintang (Goedhuis).

The specimen from the first named locality is sinistral, the majority of the other specimens is dextral; nearly all are rather small, measuring only $43^{1}/_{2}$ and 45 mill.

24. *Amphidromus perversus* Linn. var. *atricallosus* Gould.

Gould, Boston Journ. IV, p. 457; pl. 24, fig. 3. — Smith, Proc. Zool. Soc. London, 1895, p. 115; pl. 3, fig. 19.

Localities: Mounts Sekedau and Dadap (Moret).

The specimens agree better with Smith's figure than with Reeve's fig. 188. They have brown spots on the white zone near the suture, which are not mentioned in the descriptions at my disposal.

25. *Amphidromus Adamsi* Reeve.

var. pictus Fult.

Reeve, Conch. Icon. fig. 73.

Localities: Foot of Mount Tiloeng, March 1894 (Büttikofer). — Mounts Dadap and Sekedau, Ketoengau River (Moret). — Sintang (Goedhuis).

Most specimens agree better with Martens' figure (Ostas. Landschn. pl. 21, fig. 5*a*) than with those of Reeve, which represent other varieties. The specimen from Sintang much resembles var. E. of Issel (Moll. Born. pl. 5, fig. 28).

26. *Cyclophorus borneensis* Metcalfe.

Metcalfe, Proc. Zool. Soc. London, 1851, p. 71. — Martens, Preuss. Exped. nach Ost-Asien, Landschn. p. 136; pl. 3, figs. 5, 6.

Localities: Mount Liang Koeboeng, March 1894 (Büttikofer). — Southern foot of Mount Kenepai (Büttikofer). — Poelau on the Sibau River (Büttikofer). — Mounts Dadap and Sekedau (Moret). — Sintang (Goedhuis). — Foot of Mount Semedoem (Hallier).

One of the specimens belongs, according to the label, to the implements of a magician, together with species 34; it is very large, measuring 46 mill. in its largest diameter; it has an artificial hole at some distance from the aperture for passing a string. The specimens from the different localities vary much in size.

27. *Cyclophorus kina-baluensis* E. A. Smith.

Smith, Proc. Zool. Soc. London, 1895, p. 118; pl. 4, fig. 1.

Locality: Mount Tiloeng, May 1894 (Büttikofer).

28. *Leptopoma sericatum* Pfeiffer.

Pfeiffer, Proc. Zool. Soc. London, 1851, p. 244. Martini-Chemnitz, Ed. nov. pl. 40, figs. 7, 8.

Localities: Cavern on Mount Liang Koeboeng, March 1894 (Büttikofer). — Ketoengau District; Mount Dadap (Moret).

29. *Lagochilus bellulus* Martens.

Martens, Preuss. Exped. nach Ost-Asien, Landschn. p. 140; pl. 2, fig. 18.

Locality: Kampong Boegau in the Ketoengau District (Moret).

A single specimen.

30. *Pterocyclos tenuilabiatus* Metcalfe.

Metcalfe, Proc. Zool. Soc. London, 1851, p. 71. — Godwin Austen, Proc. Zool. Soc. London, 1889, p. 339; pl. 35, figs. 4, 4*a*.

Localities: Southern foot of Mount Kenepai and Smitau

(Büttikofer). — Mounts Dadap and Sekedau (Moret). — Mount Liang Gagang (Hallier).

The specimens from Mount Kenepai are very large, the largest having a diam. maj. of 34 mill. The only one collected by Dr. Hallier is a young specimen.

31. *Pterocyclos niahensis* Godwin Austen.

Godwin Austen, l. c. p. 340; pl. 35, figs. 3, 3*a*.

Localities: Mount Tiloeng, March 1894 (Büttikofer). — Mount Liang Koeboeng, April 1894, and Siniai River, March 1894 (Büttikofer). — Mount Liang Gagang (Hallier).

The number of the spiral ribs and the shape of the aperture seem not to be constant; Godwin Austen (l. c.) mentions a total number of 6 ribs; in the specimens collected during the Borneo-Expedition, the number varies from 10 to 13; however I must confess that some of them are rather obsolete, and may escape notice if the epidermis is well preserved. Godwin Austen has already stated that the shape of the wing of the aperture is variable; in the specimens before me, it is not so much ascending as in the cited figures, even resembling in this respect the figures of *P. cucullus*, fig. 2 of the same plate.

32. *Opisthoporus euryomphalus* Pfeiffer.

Pfeiffer, Proc. Zool. Soc. London, 1856, p. 337.

Locality: Mount Tiloeng, March 1894 (Büttikofer).

One large specimen, with the tube slightly nearer to the aperture than is commonly the case.

33. *Omphalotropis carinata* Lea.

Lea, Proc. Acad. Philad. VIII, p. 111. — Issel, Molluschi Borneensi, in: Ann. del Mus. Civ. di Stor. Nat. di Genova, vol. VI, 1874, p. 447; pl. 7, figs. 8, 9.

Locality: Pontianak (Moret).

One specimen.

34. *Ampullaria ampullacea* Linné.

Linné, Mus. Ulr. p. 666. — Philippi, in: Martini-Chemnitz, Ed. nov. p. 59; pl. 19, figs. 3, 4. (*celebensis*).
Locality: Poetoes Sibau (Büttikofer).

One specimen, belonging with *Cyclophorus borneensis* to the implements of a magician; it is more eroded, but otherwise agrees with fig. 4 of Philippi, which is a copy of the figure of Quoy & Gaimard; the specimen is provided with a cord through a hole.

35. *Melania Brookei* Reeve.

Reeve, Conch. Icon. fig. 207.
Localities: Southern foot of Mount Kenepai; Poelau on the Sibau River, June 1894, and Smitau (Büttikofer). — Singangi (Moret). — Sintang (Büttikofer).

A large number of specimens, varying in the development of the ribs. Some specimens, having the upper whorls smooth, seem to belong to the variety *sparsimnodosa* v. d. Busch. The specimens from Sintang are very large.

36. *Paludomus conicus* Gray.

Gray, in: Griffith, Animal Kingdom, Mollusca, pl. 14, fig. 5. — Brot, in: Martini-Chemnitz, Ed. nov. p. 26; pl. 2, figs. 12—15; pl. 7, figs. 6, 6*a*.
Localities: Southern foot of Mount Kenepai (Büttikofer). — Small brooks near Singangi (Hallier).

The specimens are typical, agreeing sufficiently with the original figure.

37. *Paludina sumatrensis* Dunker.

Dunker, Zeitschr. für Malak. 1852, p. 128. — Reeve, Conch. Icon. fig. 65.
Locality: Mouth of the Mandai River, May 1894 (Büttikofer).

A few rather small specimens.

38. *Paludina Hamiltoni* Metcalfe.

Metcalfe, Proc. Zool. Soc. London, 1851, p. 73. — Reeve, Conch. Icon. fig. 37.

Localities: Mouth of the Mandai River, May 1894 (Büttikofer). — Sai River, a branch of the Ketoengau (Moret). — Sintang (Büttikofer).

39. *Clea nigricans* Adams.

Adams, Proc. Zool. Soc. London, 1855, p. 119.

Locality: Sibau River (Büttikofer).

One young specimen.

40. *Unio Velthuizeni*, n. sp.

(Plate 4, fig. 1).

Shell winged, nearly triangular, moderately inflated, very inaequilateral, concentrically striated and folded; umbones rather obtuse, decorticated, consequently no peculiar sculpture visible; epidermis dark brown, if held against the light it is yellow, with numerous green rays; upper margin nearly straight anteriorly, ascending behind; anterior margin meeting the upper one nearly rectangularly, then rounded, passing insensibly into the ventral margin which is long and slightly sinuous; posterior margin passing by an obtuse angle into the ventral, by a distinct angle into the superior one, bent inwards above, straight in the middle, rounded below. Two obtuse angles run from the beaks towards the infero-posterior angle. Posterior slope with concave sides, forming a triangular wing. Nacre iridescent, bluish white; anterior scars irregular, rather small, posterior ones rounded, pallial scar distinct. Hinge not strongly developed, cardinal teeth elongated, obtuse, one in each valve, in the right valve a rudimentary second one; lamellae arcuate, elongated, one in the right, two in the left valve, the uppermost of these latter very obsolete.

Long. 94, alt. near the umbones 42, near the wing 61 mill.; diam. 29 mill.

Locality: Mandai River near Nanga Kalis, February 1894 (Büttikofer).

This shell is very different from any Bornean species. It has a remote resemblance with *U. delphinus* Gruner, but that species is still more elongated, much more winged and less inflated.

41. *Unio infrarostratus*, n. sp.

(Plate 4, fig. 2).

Shell oval, much inflated, very inaequilateral, rather smooth, with only slight wrinkles and numerous fine concentric striae; umbones rather prominent, decorticated; epidermis dark brown with a metallic lustre, somewhat velvety near the extremities; upper margin slightly curved posteriorly, straight anteriorly; anterior margin rounded, passing insensibly in the convex ventral margin; posterior margin oblique above, with an obtuse angle near the superior one; somewhat below the middle of its length it is suddenly bent inwards and then outward again, forming a sinus, in the lower part of which the shell is angular; the margin is then nearly straight and runs with an angle into the ventral one; from these two angles of the margin, obtuse angles run towards the umbones.

Nacre blue, iridescent near the free margins, olive yellow near the umbones; hinge strong, teeth irregular, thick, a crenulated one in the right, two nearly consolidated ones in the left valve; 2 lamellae in the left, one in the right valve; they are well developed, nearly straight. Anterior scars irregular, deep, posterior ones shallow, pallial line distinct.

Long. 67, alt. near the umbones 41, about the middle of the posterior side 47 mill.; diam. 29 mill.

Locality: Small brook near Singangi in the Ketoengau District (Moret).

This species may be distinguished from the other known Bornean species by its posterior margin, and it is easily recognizable by this character, which makes the inferior part of the posterior margin obtusely rostrate.

42. *Pseudodon aeneolus* Drouet & Chaper.

Drouet & Chaper, Mem. Soc. Zool. de France, 1892, p. 192; pl. 6, figs. 4—7.

Locality: Small brook near Singangi in the Ketoengau District (Moret).

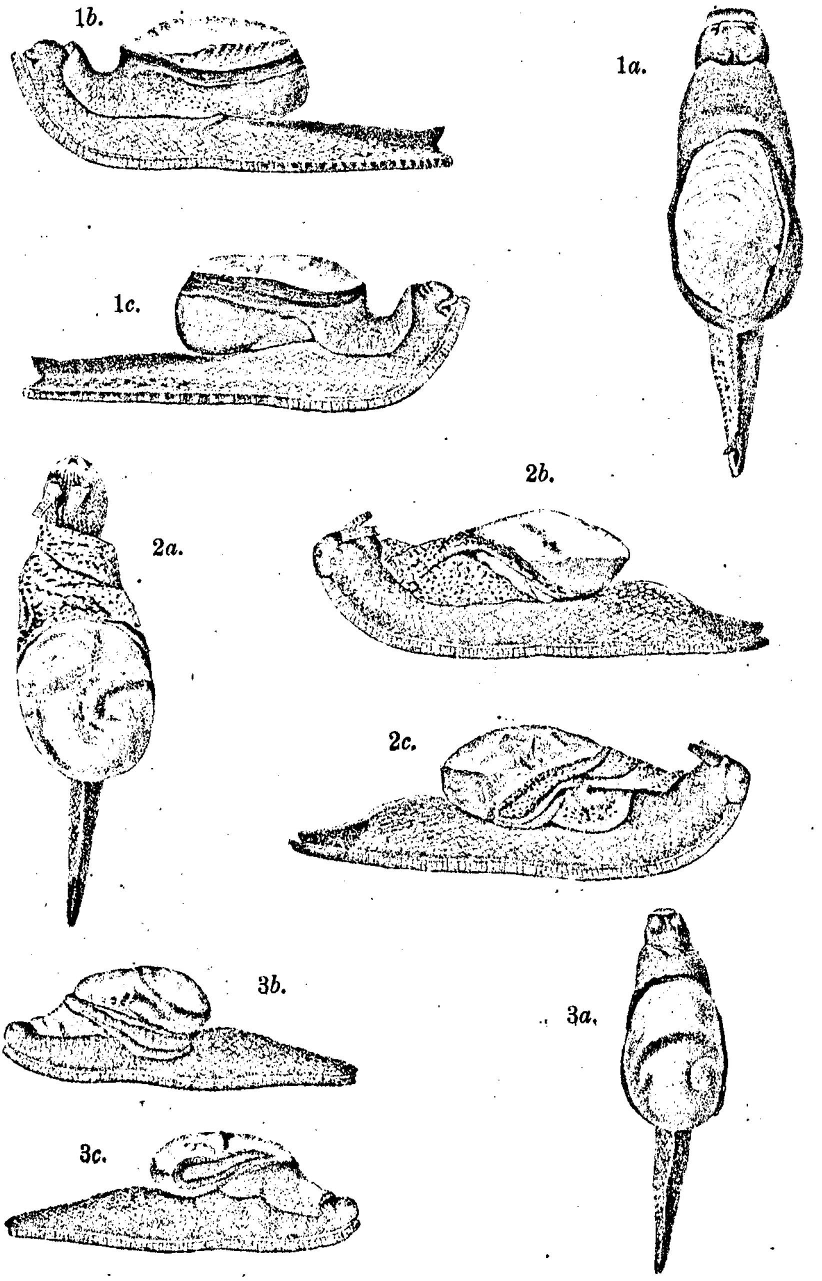
One specimen, agreeing in shape and size with fig. 7 of Drouet, in sculpture with fig. 4, very slight wrinkles being present; this character is, as already stated by the author, very variable in this species.

B. Marine Mollusks.

A few marine shells were collected by Dr. Hallier, on the shore near Sambas and on Poeloe Lemoekoetan; as they all belong to common species, I only give the names; those which are also from the 2nd locality are marked with an asterisc.

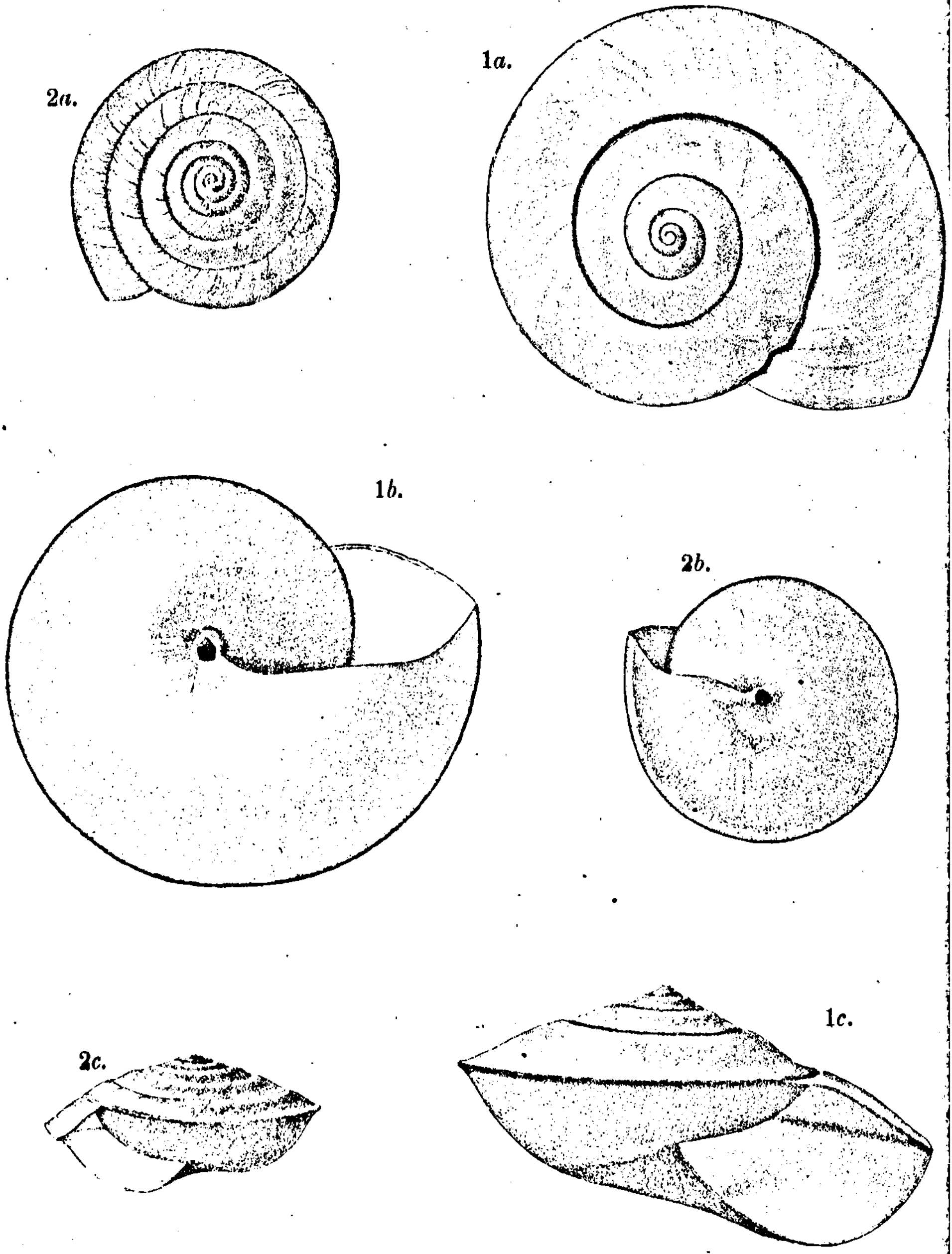
1. *Pentadactylus musivus* Kiener.
2. *Cypraea errones* Linné.
3. » *erosa* Linné.
4. *Cerithium tuberculatum* Linné, var. *variegatum* Quoy & Gaimard.
*5. *Cerithium morus* Lamarck, var. *moniliferum* Dufresne.
6. » *(Vertagus) asperum* Linné, var. *lineatum* Bruguière.
7. *Planaxis sulcatus* Born.
8. *Nerita striata* Burrow.
*9. » *chamaeleo* Linné.
*10. » *squamulata* Le Guillou.
*11. » *albicilla* Linné.
12. *Trochus maculatus* Linné.
13. *Monodonta labio* Linné.
14. *Turbo ticaonicus* Reeve.
15. *Littorina scabra* Linné, var.; only from Poeloe Lemoekoetan.

Rhoon, near Rotterdam, November 1895.


1b.
1a.
1c.
2b.
2a.
2c.
3b.
3a.
3c.

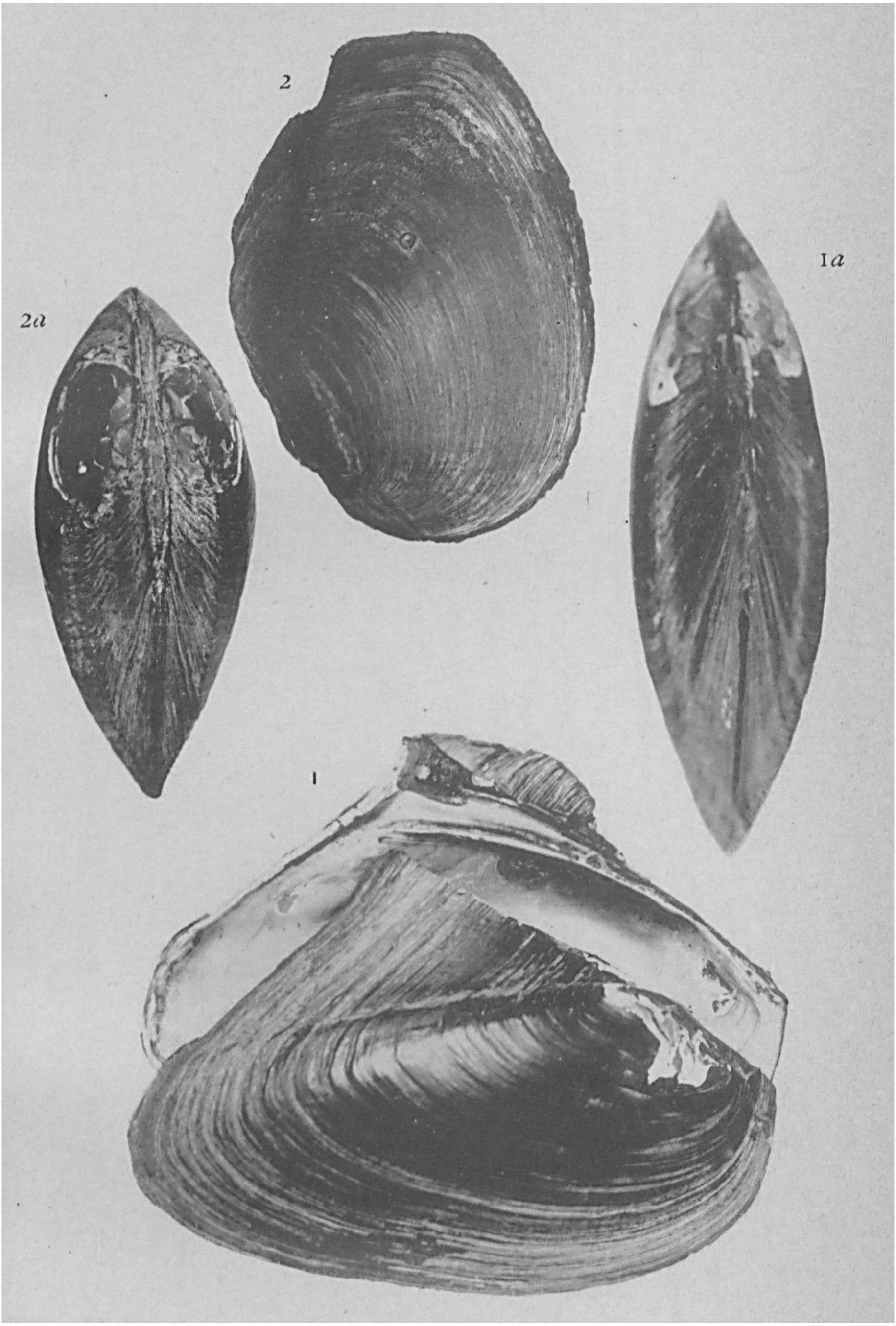
P. W. M. Trap impr.

1. Parmarion Goedhuisi *Schepm.* 2. Microparmarion litteratus *Schepm.*
3. Helicarion semicalcareus *Schepm.*


2a.
1a.
1b.
2b.
2c.
1c.

R. Raar ad nat. del. et lith.

1. Hemiplecta Büttikoferi *Schepm.*
2. Dyakia densestriata *Schepm.*



J. C. Wäkerlin ad nat. phot. Lichtdruk H. Kleinmann & Co., Haarlem.

1. Unio Velthuizeni *Schepm.*
2. Unio infrarostratus *Schepm.*